Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Original) A heat transfer system for a cyclical heat exchange system, the heat transfer system comprising:

an evaporator including a wall configured to be coupled to a portion of the cyclical heat exchange system and a primary wick coupled to the wall; and

a condenser coupled to the evaporator to form a closed loop that houses a working fluid.

2. (Original) The heat transfer system of claim 1 wherein the condenser includes a vapor inlet and a liquid outlet;

further comprising:

a vapor line providing fluid communication between the vapor outlet and the vapor inlet; and

a liquid return line providing fluid communication between the liquid outlet and the liquid inlet.

3. (Original) The heat transfer system of claim 2 wherein the evaporator includes:

a liquid barrier wall containing the working fluid on an inner side of the liquid barrier wall, which working fluid flows only along the inner side of the liquid barrier wall, wherein the primary wick is positioned between the heated wall and the inner side of the liquid barrier wall;

a vapor removal channel that is located at an interface between the primary wick and the heated wall, the vapor removal channel extending to a vapor outlet; and

a liquid flow channel located between the liquid barrier wall and the primary wick, the liquid flow channel receiving liquid from a liquid inlet.

4. (Original) The heat transfer system of claim 1 wherein the working fluid is moved through the heat transfer system passively.

5. (Original) The heat transfer system of claim 4 wherein the working fluid is moved through the heat transfer system without the use of external pumping.

6. (Original) The heat transfer system of claim 1 wherein the working fluid within the heat transfer system changes between a liquid and a vapor as the working fluid passes through or within one or more of the evaporator, the condenser, the vapor line, and the liquid return line.

7. (Original) The heat transfer system of claim 1 wherein the working fluid is moved through the heat transfer system passively.

8. (Original) The heat transfer system of claim 1 wherein the working fluid is moved through the heat transfer system with the use of the wick.

9. (Original) The heat transfer system of claim 1 further comprising fins thermally coupled to the condenser to reject heat to an ambient environment.

10. (Original) A thermodynamic system comprising:

a cyclical heat exchange system; and

a heat transfer system coupled to the cyclical heat exchange system to cool a portion of the cyclical heat exchange system, the heat transfer system comprising:

an evaporator including a wall configured to be coupled to a portion of the cyclical heat exchange system and a primary wick coupled to the wall; and

a condenser coupled to the evaporator to form a closed loop that houses a working fluid.

11. (Original) The thermodynamic system of claim 10 wherein the evaporator is integral with the cyclical heat exchange system.

12. (Original) The thermodynamic system of claim 10 wherein the evaporator is thermally coupled to the portion of the cyclical heat exchange system.

13. (Original) The thermodynamic system of claim 10 wherein the cyclical heat exchange system includes a Stirling heat exchange system.

14. (Original) The thermodynamic system of claim 10 wherein the cyclical heat exchange system includes a refrigeration system.

15. (Original) The thermodynamic system of claim 10 wherein the heat transfer system is coupled to a hot side of the cyclical heat exchange system.

16. (Original) The thermodynamic system of claim 10 wherein the heat transfer system is coupled to a cold side of the cyclical heat exchange system.

17. (Original) A method utilizing the systems recited by claims 1-16.

18. (New) An evaporator for a heat transfer system, the evaporator comprising:

a heated wall;

a liquid barrier wall adjacent the heated wall, the liquid barrier wall and the heated wall being configured to contain working fluid between adjacent sides of the heated wall and the liquid barrier wall;

a primary wick positioned between the adjacent sides of the heated wall and the liquid barrier wall;

a vapor removal channel that is located at an interface between the primary wick and the adjacent side of the heated wall; and

a liquid flow channel located between the adjacent side of the liquid barrier wall and the primary wick.

19. (New) The evaporator of claim 18 wherein the primary wick, the heated wall, and the liquid barrier wall are planar.

20. (New) The evaporator of claim 18 wherein the primary wick has a thermal conductivity that is low enough to reduce leakage of heat from the heated wall, through the primary wick, toward the liquid barrier wall.

21. (New) The evaporator of claim 18 wherein the heated wall is defined so as to accommodate the vapor removal channel.

22. (New) The evaporator of claim 18 wherein the interface at the primary wick is defined so as to accommodate the vapor removal channel.

23. (New) The evaporator of claim 18 wherein a cross section of the vapor removal channel is sufficient to ensure vapor flow generated at the interface between the primary wick and the heated wall without a significant pressure drop.

24. (New) The evaporator of claim 18 wherein the surface contact between the heated wall and the primary wick is selected to provide better heat transfer from a heat source at the heated wall into the vapor removal channel.

25. (New) The evaporator of claim 18 wherein a thickness of the heated wall is selected to ensure sufficient vaporization at the interface between the primary wick and the heated wall.

26. (New) The evaporator of claim 18 wherein the liquid flow channel supplies the primary wick with liquid from a liquid inlet.

27. (New) The evaporator of claim 26 wherein the liquid flow channel is configured to supply the primary wick with enough liquid to offset liquid vaporized at the interface between the primary wick and the heated wall and liquid vaporized at the liquid barrier wall.

28. (New) The evaporator of claim 1 further comprising:
a secondary wick between the vapor removal channel and the primary wick; and
a vapor vent channel at an interface between the secondary wick and the primary wick.

29. (New) The evaporator of claim 28 wherein vapor bubbles formed within the vapor vent channel are swept through the secondary wick and through the liquid flow channel.

30. (New) The evaporator of claim 28 wherein the vapor vent channel delivers vapor that has vaporized within the primary wick near the liquid barrier wall away from the primary wick.

31. (New) The evaporator of claim 18 wherein the primary wick, the heated wall, and the liquid barrier wall are annular and coaxial such that the heated wall is inside the primary wick, which is inside the liquid barrier wall.

32. (New) The evaporator of claim 18 wherein the vapor removal channel is thermally segregated from the liquid flow channel.

33. (New) A heat transfer system comprising:

an evaporator including:

a heated wall;

a liquid barrier wall adjacent the heated wall, the liquid barrier wall and the heated wall being configured to contain working fluid between adjacent sides of the heated wall and the liquid barrier wall;

a primary wick positioned between the adjacent sides of the heated wall and the liquid barrier wall;

a vapor removal channel that is located at an interface between the primary wick and the adjacent side of the heated wall, the vapor removal channel extending to a vapor outlet; and

a liquid flow channel located between the adjacent side of the liquid barrier wall and the primary wick, the liquid flow channel receiving liquid from a liquid inlet;

a condenser having a vapor inlet and a liquid outlet;

a vapor line providing fluid communication between the vapor outlet and the vapor inlet; and

a liquid return line providing fluid communication between the liquid outlet and the liquid inlet.

34. (New) The heat transfer system of claim 33 further comprising a reservoir in the liquid return line.

35. (New) The heat transfer system of claim 34 wherein the evaporator comprises:

a secondary wick between the vapor removal channel and the primary wick; and

a vapor vent channel at an interface between the secondary wick and the primary wick.

36. (New) The heat transfer system of claim 35 wherein vapor bubbles formed within the vapor vent channel are swept through the secondary wick, through the liquid flow channel, and into the reservoir.

37. (New) The heat transfer system of claim 34 wherein the reservoir is cold biased.

38. (New) The heat transfer system of claim 33 wherein the evaporator is planar.

39. (New) The heat transfer system of claim 33 wherein the evaporator is annular such that the heated wall is inside the primary wick, which is inside the liquid barrier wall.

40. (New) The heat transfer system of claim 33 wherein liquid returning into the evaporator from the condenser is subcooled by the condenser.

41. (New) The heat transfer system of claim 40 wherein an amount of subcooling produced by the condenser balances heat leakage through the primary wick.

42. (New) The heat transfer system of claim 33 wherein the heated wall contacts a hot side of a Stirling cooling machine.